GEOGRAPHIC SCHOOL BULLETINS

THE NATIONAL GEOGRAPHIC SOCIETY, WASHINGTON 6, D.C.

VOL. XXXV, NO. 18, FEBRUARY 11, 1957 . . . *To Know This World, Its Life*

► New Zealand

► Cities of the World: A Look at Marseille

► Coast and Geodetic Survey

► Bighorn Athlete

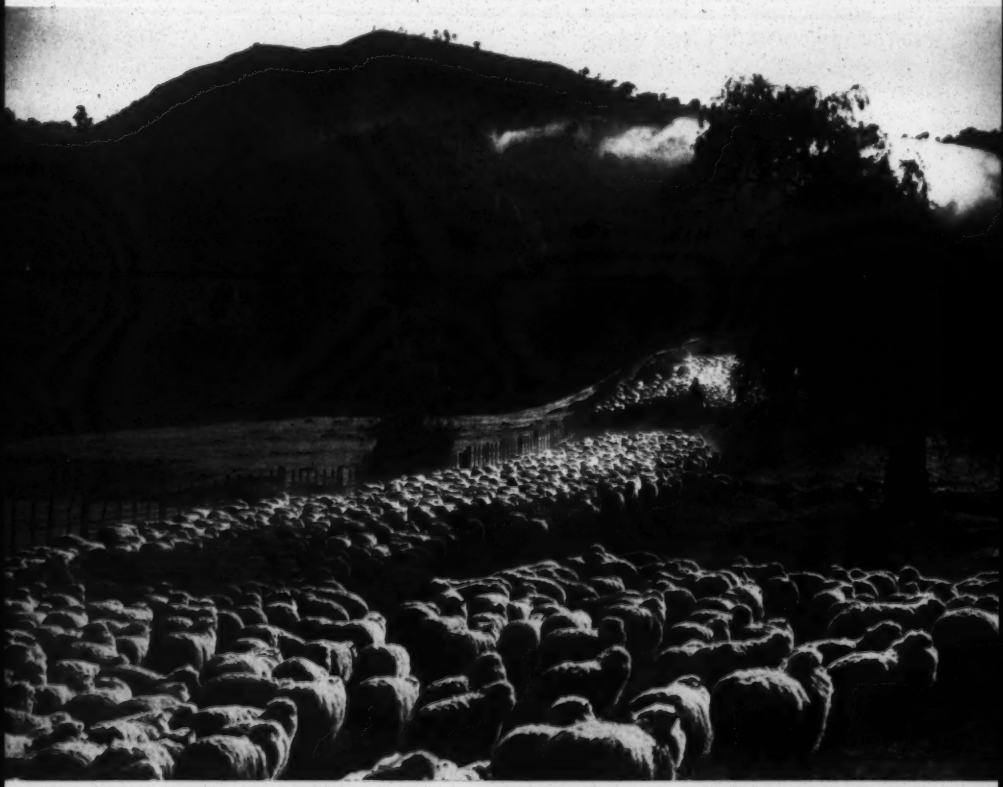
► They Remembered Gettysburg

MAORI GREETING involves rubbing noses—this time with a meticulously carved wooden idol that stands before a meetinghouse on New Zealand's North Island

HOWELL WALKER, NATIONAL GEOGRAPHIC STAFF

to have been left from the age of dinosaurs. People can cook food in the boiling water of hot springs and geysers. Along some stretches of the coast lie sparkling tropical beaches where sharks play offshore. But New Zealand's rain-swept fiordland recalls Norway. There, deep inlets twist between forested mountains and rock-faced cliffs. Lacy waterfalls tumble from streams that may never have been fully explored.

Among these wonders spreads rich land—open valleys, sweeping upland meadows—comprising about a third of the Dominion's land area. Millions of sheep graze on these acres, making New Zealand the world's leading exporter of lamb and mutton, and second only to Australia in the export of wool. Dairy cattle



NEW ZEALAND HERALD

SUNRISE GILDS FLEECE as sheep seek rich pasturage near ill-named Poverty Bay

thrive. Butter, cheese, and processed milk earn more money abroad than any other New Zealand products.

Some 2,000,000 well-fed, easy-going people dwell in this favored land. More than 100,000 are Maoris, brown-skinned Polynesians whose ancestors arrived in huge ocean-going canoes more than 600 years ago. They found New Zealand populated by aboriginal natives and practically wiped them out. When British settlers drifted in, after Capt. James Cook claimed the land for England, savage warfare flamed between newcomers and Maori tribesmen. Now, a century later, these peoples regard each other with mutual respect. Maoris frequently hold office in Parliament.—E.P.

UMI

New Zealand

Wild Glaciers, Boiling Geysers, and Placid British Towns

HOWELL WALKER, NATIONAL GEOGRAPHIC STAFF

NO, it's not an English town, despite bikes, "prams," "tram," and looming cathedral. It's Christchurch, New Zealand, just about as far from Great Britain as you can get.

Here, some 175,000 citizens, almost all owning bicycles, cling proudly to their English "look" and ship to Britain quantities of lamb and mutton raised nearby.

Christchurch is by no means typical of New Zealand. Each of the four leading cities of the Dominion has individuality. As Christchurch is English, so Dunedin, famed for its university, is as Scottish as Edinburgh. Sprawling Auckland, New Zealand's largest metropolis, smacks of the South Seas. Game fish leap in the cobalt waters of its harbor. Wellington holds the seat of government for a nation as varied and full of surprises as its geography.

Three islands form New Zealand. The two principal ones, North and South Islands, take the shape of a broken boot, toe pointing north toward the Equator. Little Stewart Island dangles below South Island. Smaller than California, New Zealand stretches some 1,100 miles. Balmy semitropical breezes may wash North Cape, at the top of North Island, while bitter, rain-streaked winds buffet Murderer Cove, at the bottom of Stewart. Terrain, also, adds variety to New Zealand's climate. All three islands have mountainous spines. South Island's backbone, the Southern Alps, rises to towering Mount Cook, 12,349 feet high. Sixteen other peaks top 10,000 feet.

Some of these wear forbidding glaciers on their shoulders. Many carry snow all year round. In contrast, low, coastal areas sprout giant tree ferns that seem

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The Mediterranean sun makes everything lazy except the Marseillais tongue. It seems to clack endlessly. Along twisting streets of the old town, knife grinders and fishermen's wives keep up a constant hubbub. On the water front, fishmongers (above) have to shout to compete with port noises.

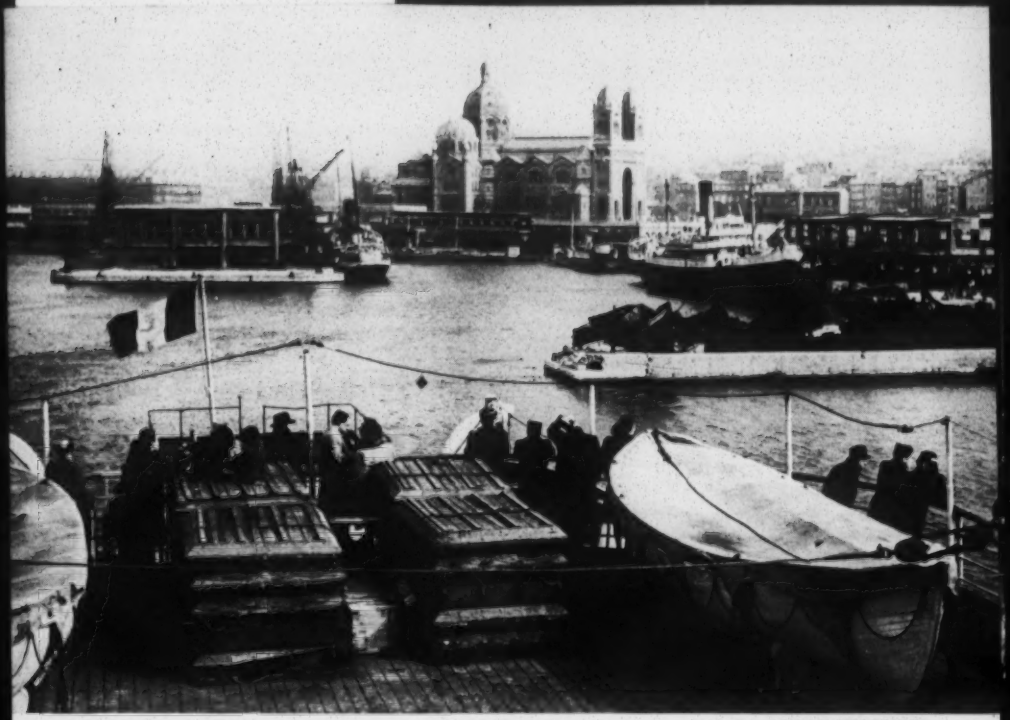
All France jokes about Marseille's accent. Listen to it along the Canebière, the city's broad boulevard of cafés and gaiety. It rises through loud laughter where chairs and tables spill out over the wide sidewalk.

Accent or no, when Marseille's troops marched through Paris during the French Revolution, they sang a stirring new battle song. It was named for them—The Marseillaise. Years later it became the Republic's national hymn.

On an abrupt hill behind Marseille rises the basilica of Notre Dame de la Garde. A shrine for mariners, the church holds replicas of ships, the humble offerings of seamen. Atop its belfry, a colossal gilt statue of the Virgin Mary gazes far out over the blue Mediterranean. Close by, the stone battlements of Chateau d'If rear from indigo blue sea recalling Dumas's tale of *The Count of Monte Cristo*, imprisoned there for bitter years. The statue scans the Vieux Port (Old Port) where Phoenicians anchored 600 years before Christ. It gazes on newer dock areas built since World War II. Sleek freighters are unloading there now and little boys salvage oranges that spilled from an Algerian ship.—J.A.

W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF (ABOVE AND BELOW)

UMI



MAYNARD OWEN WILLIAMS

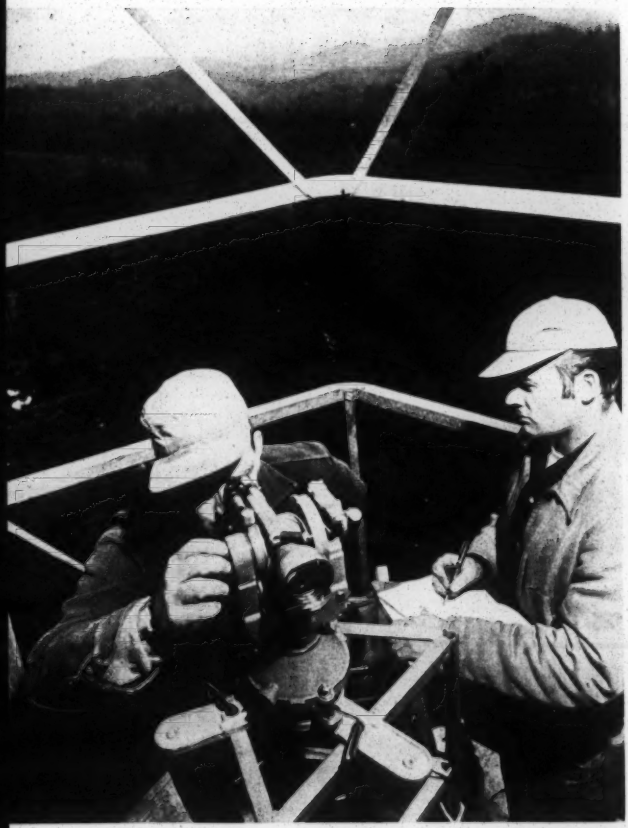
A Look At MARSEILLE

TRAMP steamers, freighters, liners from all the world tie up near the majestic cathedral at the port of Marseille. Beyond a water front smelling of fish and tar, lies the city, aged nearly 2,600 years. It is famed for its noise, its bouillabaisse, the speech of its citizens—a vast mispronunciation of the musical French language.

Inland from Marseille spreads sunny French Provence. Fabulous resorts of the Riviera line the near-by coast. Marseille has little in common with these neighboring regions. For long centuries the Mediterranean world has converged upon the city, sometimes to trade, sometimes to conquer. Footsteps of dark-skinned mariners of Martinique and the voices of traders from Indo-china have livened its streets through history. Visits from Spaniards, Algerians, Moroccans, Senegalese, Greeks, and Orientals have marked it indelibly.

Marseille had wealth, power, and a noisy population when Paris was a fledgling village perched beside the Seine. Today, next to the French capital, it is France's second city. Its deep-water harbor can berth the largest vessels afloat. Its docks handle cargo faster than any others in Europe. Tons of raw materials from all over the world funnel into Marseille for processing. Smoke-belching plants churn out soap and steam engines, automobiles and bricks. Still other factories refine sugar and oil.

Then there is bouillabaisse—a thick soup made of as many varieties of edible sea animal as the "chef" can lay hands upon. Vegetables and spices add body and zest. Garnished with a hardish roll, bouillabaisse brings joy to any true Marseillais—that is, if he can stop talking long enough to gulp it. The fishermen below seem to manage adequately.



NEAR GROVELAND, California, triangulation technicians man a 77-foot-high tower to map another area

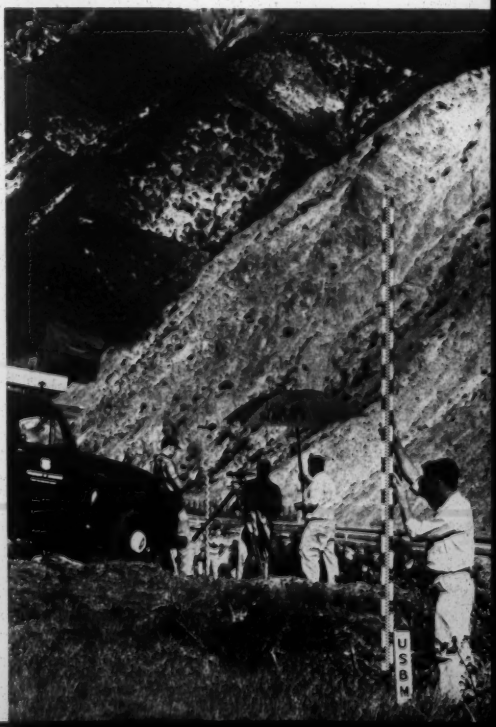
miles, and its resources have been claimed by the United States.

There are few dull moments for Survey workers. To aspiring applicants the service says, "There are hardships, and dangers." Savage Moro knives crippled one officer in the Philippines. Three men who ventured out from a base camp in the Arctic never returned. A crocodile crushed the leg of another. One of their number died at his desk when Manila was bombed.

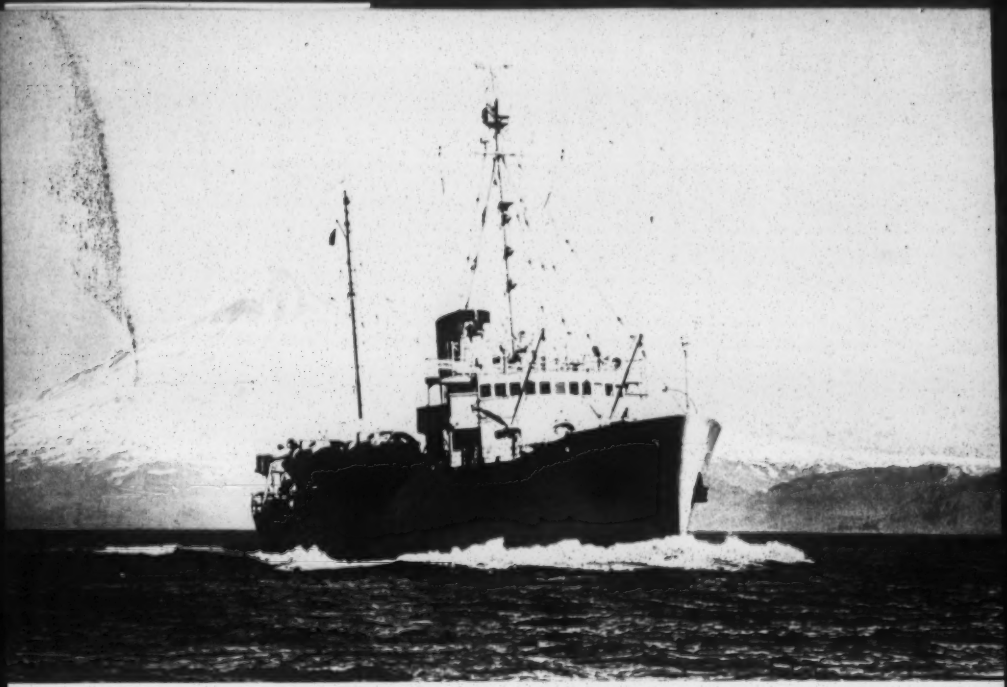
In quieter moments they must sometimes pen polite letters of regret to ambitious youngsters wanting charts of sunken treasure.

From earliest days the agency has brooked no temperament—not even from an artist. James McNeill Whistler, an employe in 1854 after three years of failure at West Point, was fired for doodling and dawdling. Now the Survey cherishes several of his sketched headlands and some fancy figures alongside charts—the first Whistler etchings. They recall many other remarkable employees: Major Isaac Stevens, later Governor of Washington Territory; Ambrose P. Hill, who became a Confederate corps commander.

Admiral Robert Peary discovered the North Pole in 1909 under orders to gather data for the Survey. His conquest of the Pole was authenticated by Survey scientists, and the National Geographic Society—two organizations which have long worked in harmony.



AT CAJON pass, near San Bernardino, Survey men run a new level line near the San Andreas earthquake fault. The umbrella keeps the sun's glare off the instruments



Coast and Geodetic Survey

Photographs by National Geographic Photographer J. Baylor Roberts

EXCITEMENT suddenly gripped all hands aboard a trim ship off Alaska. They had discovered an underwater rock rising 650 feet to within a dangerous six yards of the ocean surface.

"Let's name it the Washington Monument," someone suggested.

Sounds adventurous? It's all in the routine service given the Nation for 150 years by the United States Coast and Geodetic Survey. A stroke of President Jefferson's pen established the agency to chart bays and harbors to help mariners recognize landmarks. Today, every American benefits from its high, wide, and deep delving for facts into the mysteries of earth, sea, and sky. It fixes measurements that form bases for national boundaries and homeowners' fences. It flashes warnings across oceans when a tidal wave threatens.

A massive producer, the Survey has installed some 400,000 bench marks for elevations above sea level, and over 150,000 triangulation stations showing exact longitude and latitude locations. Since 1952, its far-ranging scientists and technicians have completed a survey of the strategic arctic coast of Alaska—a daily grind sometimes enlivened by peevish objections of lounging sea lions. Charts of lonely Bering Sea have been updated. Some of the Survey's six major vessels pressed a search for sunken wrecks along the Atlantic Coast. In more cloistered environments, Survey scientists "shoot" stars to check the earth's movement.

Ever-probing science looks ahead through the Survey. It assumes a major role in magnetic observations for the International Geophysical Year (1957-58). The findings will facilitate the launching of the first earth satellite (GSB, Oct. 22, 1956). Meanwhile, chartings will be extended on the Georges Banks and other areas on the continental shelf. This underwater domain of 2,000,000 square

SAM WOODRING, CRANDALL STUDIOS

BIGHORN ATHLETE

LEAPING from crag to crag, our bighorn sheep only pauses to graze and rest on alpine slopes, above. Much of the time he's an all-American athlete.

Many wild goats are agile, sure-footed climbers. Step by step, they pick paths along dangerous heights. But the bighorn sheep seems to throw caution to the winds in his reckless bounds. Fitted with soft-padded feet to act as shock absorbers, he plunges full tilt down a steep 100 foot slope. He jumps with daredevil abandon from rock to rock, carried by his own momentum.

The Rocky Mountain bighorn is the best known of three varieties. He dwells among high peaks of the Rockies and Sierra Nevadas, from British Columbia to northern Mexico. Though rams rarely stand more than three and a half feet tall at the shoulder, their horns sometimes spread up to four feet three inches, measured on the outside curve. The Stone sheep of the Yukon and British Columbia is smaller. Perhaps prettiest of all, the little Dall sheep of Alaska and western Yukon wears a pure white coat, carries long horns, slender and graceful.

The massive horns of the spectacular bighorn have made prized trophies for many a hunter. As a result, bighorn populations have evaporated throughout much of their former range. For years the mountain-hopping sheep flirted with extinction. Today, large herds still roam in national parks. Others have found safety in remote mountain areas where few men will follow. Here they graze in herds numbering up to 60 animals. Here rams fight their gallant battles, charging each other full tilt, giant horns meeting in echoing crashes. Here ewes gently urge their young to try a little leap, then a larger one. Daily, wherever the bighorns still survive, fantastic Olympic Games take place on peaks that seem to brush the very roof of the sky.—J.A.

UMI

Unresting minds in the Survey have pioneered paths of science. They produced a 750-pound aerial camera that simultaneously exposes nine separate images on a single strip of film. The assembled images narrow down to a needle-point sharpness. From 21,000 feet elevation, each exposure covers a 270-square-mile patch of earth on a scale of 1:30,000—enabling cartographers to spot places in almost intimate detail.

A dramatic account of the Survey's use of the camera, and its other activities appears in the February issue of the *National Geographic Magazine.*

Diversity brightens the Survey's daily chores. Some officers ride out an autumn hurricane while studying the southerly Gulf Stream. Others "wire drag" waters

NATIONAL GEOGRAPHIC PHOTOGRAPHER JOHN E. FLETCHER

SURVEY TECHNICIANS lend skills to the Inter-American Geodetic Survey to help map both Americas. These men trespass on flowers outside the stadium at Managua, Nicaragua

off the rocky coast of Maine by towing a loose cable that locates submerged pinnacle rocks, ledges, and hidden wrecks. Other men at Washington headquarters prepare copy to feed roaring color presses that produce charts, maps, and other results of field efforts.

Still others operate uncanny machines that predict high and low tides years in advance—useful to mariners, seacoast dwellers, and swimmers. The amazing "brain" can pinpoint, for example, low tide at the southern tip of Madagascar on July 23, 2057, in case you are planning a swim that day.—S.H.

National Geographic References: ***Magazine***—Feb. 1957, "Charting Our Sea and Air Lanes," (school price, 55¢); March, 1956, "Men Who Measure the Earth," (school price, 55¢).

It's so big you can't visualize the battle from the ground. But from an observation tower the Federal's enormous "fishhook" battle line takes shape, with rock-strewn Big Round Top at the shank. Next is Little Round Top; then Cemetery Ridge, Cemetery Hill, and so around the "hook" to Culp's Hill, and Spangler's Spring.

Eastward, on Seminary Ridge, Lee strung five miles of battle line on the second day's fighting. I thought back: no wonder the old men couldn't remember seeing everything.

There were 75,000 of their kind—Confederates—and 88,000 in blue. Most were in their 'teens and early twenties; and the South was full of fight with the Chancellorsville victory but two months behind. The North was wrought up, too, with so slashing an army on its soil.

CLIFTON ADAMS

GENERAL HANCOCK, whose statue scans the battlefield, commanded the crack Union corps that Pickett attacked. Wounded, Hancock watched his men take the brunt of the charge. The Southerners broke through, then in hand-to-hand fighting were driven off

Roaming the peaceful, grassy slopes, I found it hard to believe that here had raged an epochal three-day conflict which decided the destiny of my country.

Moving along, one overhears random accounts of the battle. Lee had hoped that a victory on Northern ground would weaken the Union will to fight. He had crossed the Potomac at Williamsport and Shepherdstown, and headed towards Harrisburg. But closely-pursuing Federals pinned him down near Gettysburg. A collision of forces occurred and Lee won on July 1.

Soon armies stumbled southward through Gettysburg streets. Smoke veils hung on solid houses. Frightened women herded children indoors, to crouch in cellars. Wounded men crawled, then lay quiet. The roar of battle drifted off toward the southerly hillsides where, in better times, picnic parties had sat among the rocks.

UMI

NATIONAL PARK SERVICE

A section of Gettysburg's cyclorama shows Union supports surging into action

SCOTT HART *worked on newspapers and magazines and wrote three novels before joining the* Geographic School Bulletins *staff. Two books deal with the Civil War, a topic that has stirred him since his boyhood, when aged ex-Confederates dandled him on their knees at his Virginia home. He wryly recalls precious hours wasted in talk about local ball games instead of, for example, Pickett's Charge. But he heard enough to inspire many stories, including this one for Lincoln's birthday.*

They Remembered Gettysburg

MY childhood was filled by the Civil War reminiscences of old men. Battle-haunted voices told of Sharpsburg, Cold Harbor, of dusty roads long obliterated except in memory.

But *Gettysburg*. Then old eyes would narrow. "There was the place to have fought, boy . . . You've read of the Round Tops, and Devil's Den . . . In The Charge one shell knocked a whole company down . . . You notice I limp . . ."

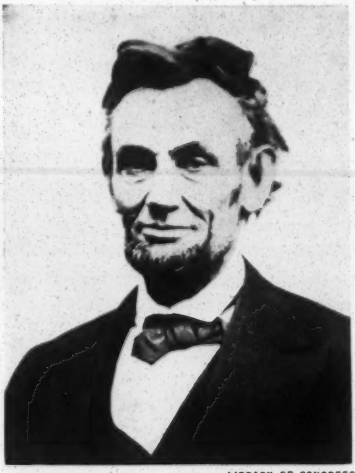
I thrilled to the recreated bugle calls, the dancing, daredevil flags. And since each veteran reduced the size of the battlefield to the bit of it he saw, I innocently pictured the fight raging over something like a cow pasture.

I gasped, years later, when first seeing Gettysburg. The park covers nearly 3,000 acres, enough for some 2,390 monuments and markers, and 26 miles of paved avenues. And, sadly, space for a vast cemetery where low headstones whiten the grass like clumps of eternal snow.

The Battle Inspired Lincoln's Matchless Address . . .

I walked the town's orderly streets. They differed from the dusty lanes where the old men I knew had marched.

But beyond Gettysburg the very landscape seems the same. The rocks of Devil's Den, where Southern sharpshooters crouched, cast melancholy shadows. Sunshine filters wanly through the woods where Pickett's spirited men bombarded each other with green apples before the real bombardment fell. All about, something seems to command a stillness where 51,000 men were killed or hurt in the Nation's terrible testing.



LIBRARY OF CONGRESS

Few battle sights equal the dramatic mile crossed head on by Pickett's men. Now it is a field of whispering grass. In 1863, that July day, 218 opposing cannons bellowed the loudest barrage ever heard in the Western Hemisphere. Casualties mounted before the assault ever started. When the columns stepped out, one Rebel congratulated a rabbit he saw running. The magnificent spectacle of 15,000 men advancing beneath their sun-blazed flags drew a moment's admiration, then a prolonged hail of death from the Union lines. Lee reached his high-water mark. The next day he left for Virginia.

Some four months later, on November 18, 1863, Abraham Lincoln, still doubtful of the war's outcome, came to town to make a "few appropriate remarks" in dedicating the new cemetery. People thought he looked quiet, thin, and careworn from the burdens of war and the sickness of Tad, his son.

The town itself must have deepened his despair. For though milling swarms jammed the streets, hospitals and private homes were still filled with soldiers, their wounds half healed. Though bands serenaded important visitors and impromptu speeches riddled the air, the carcasses of horses still littered the shell-churned battlefield.

Next day, Lincoln, dressed in a black suit, high hat, and white gloves, mounted a horse, and joined the procession to Cemetery Hill. Saluting guns measured the slow march. Waiting thousands pressed against the rostrum to see the President of the torn United States.

Soon Edward Everett, the famed orator, struck a stance, for two hours purpling the air with phrases... "Overlooking these broad fields now reposing from the labors of the waning year" . . . "The whole earth is a sepulchre of illustrious men" . . . "It is sweet and becoming to die for one's country."

Finally he ended. The somber President stirred in his chair, put on his steel-bowed glasses, and drew two sheets of paper from a pocket. On them he had scrawled the few words that he hoped might give a sort of meaning to the battle that had filled fresh graves.

Lincoln's Gettysburg Address is still echoing; everyone knows it.

ABRAHAM LINCOLN'S LAST PORTRAIT

The photograph above was taken by Alexander Gardner at his studio in Washington, probably on April 10, 1865. General Lee had just surrendered at Appomattox, though the news had not yet reached the President. Four days after this picture was made, Lincoln was assassinated at Ford's Theater.